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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/080,730	02/22/2002	Labros S. Petropoulos	33356US1	8347

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EXAMINER

FETZNER, TIFFANY A

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 09/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/080,730

Applicant(s)

PETROPOULOS ET AL.

Examiner

Tiffany A Feltzner

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 29 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 15 July 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED Final ACTION

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Drawings

2. The proposed drawing corrections submitted July 15th 2003, which:

A) eliminates/cancels originally filed Figures 2a, 2b, 3, 4, 8, and 14 which initially were just columns of numerical data, without any specification, (i.e. a heading, table, legend, or key) to identify what the data represents, or to which coil configuration(s) the data was related, have been approved by the examiner.

B) The renumbering of the remaining figures and the correction of all reference numbers, within the specification, that have been impacted by the correction of the figure numbering have also been approved by the examiner.

C) New Formal drawings, for all figures which include each of the red-ink approved changes are needed in response to this office action.

Response to Arguments

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3. Applicant's arguments filed July 29th 2003 have been fully considered but they are not persuasive. Applicant merely argues, that the reference provided by the examiner does not teach the structure claimed. However, the examiner is not persuaded by applicant's argument for the following reasons.

A) Applicant's **claims 1-6** are drawn to an MRI gradient coil set. The **Lampman** reference is specifically an MRI gradient coil set. The figures of **Lampman** show the combination of a uniplanar, (i.e. a single plane) and biplanar (i.e. more than one plane) gradient coil set. The specific teachings are provided below. The examiner is **maintaining** all of the rejections from the first office action, and has expanded the previously provided referenced citations, to further clarify to applicant how the prior art shows the requirements of the limitations claimed, because applicant is arguing that **Lampman** lacks the claimed structure. Because the structure of the gradient coil system of **Lampman** meets and shows the claimed features applicant's argument is not persuasive.

B) Applicant's claims also omit and fail to point out and distinctly claim the essential structural cooperative relationships of the elements, such omission amounting to a gap between the necessary structural connections. Specifically how the components are arranged, where the components are located relative to one another and the function performed by the claimed components, are not attributes of applicant's claims. Applicant's claim merely requires the presence of the claimed components, therefore the examiner is required to give the components the broadest possible interpretation, which is met by the structure of **Lampman**. The examiner **may not** read unclaimed structural

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components, relationships, or limitations from the disclosure into the claims. The examiner applies prior art based upon 'what is actually claimed and set fourth'.

Applicant's **claims 1-6** are just a list of components, therefore "**any**" MR gradient set which teaches, shows, or directly suggests from the teachings or figures, the components of **claims 1-6** meet the requirements of applicant's claims, and render applicant's entire argued position not persuasive.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. **Claims 1-6** are **finally** rejected under **35 U.S.C. 102(b)** as being anticipated by **Lampman**, US patent 5,497,089.

6. With respect to **Claim 1**, **Lampman** teaches and shows "An MRI gradient coil set, said coil set comprising: a uniplanar Z-gradient coil;" [See figure 3 which shows that the windings for the z-axis of the insertable gradient coil shown in Figure 2 occur within a single plane, and col. 4 line 12 through col. 5 line 31. Additionally Figures 2, 5, 6, 7, and 8 show additional gradient coil structures that have a "uniplanar Z-gradient coil".] **Lampman** also teaches and shows "a biplanar X-gradient coil; and a biplanar Y-gradient coil" [See figure 5, col. 7 line 66 through col. 8 line 9, where the windings for the x-gradients, and y-gradients are shown to be biplanar. Figures 2, 6, 7, and 8 show additional gradient coil structures that have a "a biplanar X-gradient coil; and a biplanar

Y-gradient coil".] **Lampman** also shows "said gradient coil set providing an open z-axis face." (I.e. a vertical opening along the z-axis) [See Figure 2, where the patient is inserted into a vertical, open face of the gradient coil, along the z-axis; and Figure 1 where the patient and gradient coil system are arranged inside the MRI device.]

7. With respect to **Claim 2**, **Lampman** teaches and suggests "at least one of said coils is a shielded coil", because **Lampman** teaches the presence of an RF shield 46 between the insertable RF and insertable gradient coils, and consequently at least one of the insertable gradient coils is a functionally shielded coil. [See col. 3 lines 54-59] The same reasons for rejection, that apply to **claim 1** also apply to **claim 2**.

8. With respect to **Claim 3**, **Lampman** teaches and shows "said biplanar coils include shoulder reliefs." [See Figures 2, 5, 6, 8, and 1; abstract, col. 8 lines 10-40.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 3**.

9. With respect to **Claim 4**, **Lampman** teaches and directly implies from the illustrated figures that "at least one of said coils is a phased array coil", because the windings for the insertable axial z-gradient coil constitute an array of windings, as shown in Figure 3. Additionally, **Lampman** teaches that the current density varies only along the axial direction of the z coil. [See col. 4 lines 36-38]. **Lampman** also teaches that each winding is a discrete loop, at a distance from the isocenter and that the end sections of windings are tilted by an angle θ relative to the z-axis. The tilting of the windings by an angle θ , directly implies and suggests that in sections 62 and 68 of figure 1 the current flowing through the windings along the z-axis, have a different phase due to the tilting angle θ than the windings that occur in section 60 of Figure

2. It is well known that a group of windings is also considered and understood to be equivalent to an array of windings, therefore the arrangement of the windings of the z-gradient insertable coil, shows that the z-gradient insertable coil functions as a "phased array coil". [See col. 4 line 63 through col. 5 line 31. Figures 2 and 3.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 4**.

10. With respect to **Claim 5**, **Lampman** teaches "a radio frequency coil integrated therewith." [See RF coil 44, col. 3 lines 54-59] The same reasons for rejection, that apply to **claim 1** also apply to **claim 5**.

11. With respect to **Claim 6**, **Lampman** shows directly from the figures that "said coils are conjoined", (i.e. that the gradient coils are brought together so as to meet, or overlap). [See also Figure 5, the teachings of col. 5 line 32 through col. 8 line 9, and Figure 4.] The same reasons for rejection, that apply to **claim 1** also apply to **claim 6**.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


13. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is (703) 305-0430. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached on (703) 308-3875. The fax phone number for the organization where this application or proceeding is assigned is (703)305-3432.

16. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.



TAF

September 16, 2003



Diego Gutierrez

Supervisory Patent Examiner

Technology Center 2800